

scarcely perceptible, ovoid tympanum, corresponding portion of cephalic face not swollen. Caudal femora greatly dilated; caudal tibiæ with dorsal margins each armed with three pairs of extremely long, widely spaced, unmodified, mobile spines\* placed in a double row and armed distad with three external and two internal spurs. The ventro-internal spur, always present in *Nemobius*, is missing in the present genus. Caudal metatarsi non-sulcate and unarmed dorsad.

*Remarks.*—With the exception of the characters given for the female, the original description of *H. alleni*, with which is also given valuable data on the capture and habits of the insect, is excellent. A study of the North American species of the genus *Nemobius* has prompted the examination and study of the typical material of this insect.

The peculiar reduction of the tegmina in the male of this insect is shown in the figure here given.

*Distribution.*—This genus is known only from the mangrove swamps of Moraine Cay in the northern Bahamas.

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## A New Parasite of the House Fly (Acarina, Gamasoidea).

By H. E. EWING, Corvallis, Oregon.

(Plate XVII.)

The great interest which of recent years has attached to the house fly because of the discovery of its role as a disease-carrier has caused economic entomologists to consider all possible means which may be employed for its control. As in the case of most insect pests, natural enemies have received much attention in this regard. So far, although no one species has been found that offers any serious check to the increase of the house fly, many have been recorded as preying upon it. Dr.

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\* These spines are evenly rounded and covered with hairs, but have, like in *Nemobius*, their apices uncinatè, smooth, sharp and hard.

L. O. Howard, in his excellent volume on this pest, gives a whole chapter upon its natural enemies. These, as the author states, "begin with the acme of the vertebrate series (man himself) and end with the lower forms of plant life." Among the natural enemies listed are included: fungous diseases, protozoa, nematodes, mites, spiders, the house centipede, predaceous and parasitic insects, birds, and fly-catching rats. The parasite which I have to report is of biological interest chiefly, yet those interested in economic entomology may be glad to note that another natural enemy has been recorded for our dreaded *Musca domestica*.

#### HABITS.

For several years the writer has noticed that a house fly is occasionally found flying about with a rather large gamasid mite hanging to it. I have caught many such flies in houses and in laboratories, and others have sent to me flies which carried this mite upon their bodies. I never have noticed more than a single gamasid upon a single fly, and this individual has usually been found running about on the body of its host. It is well known that flies, as well as many other insects, carry non-parasitic mites, especially of the family *Gamasidae*, whereby the distribution of the latter is effected. Beetles, especially, may carry a score or more of non-parasitic mites upon their bodies for long distances. In fact I have frequently found such individuals almost or quite concealed by scores of the nymphs of the genus *Uropoda*, all of which were getting a "free ride," though these injured their pseudo-host in no way. For these reasons I paid little attention to the first gamasid mites found on flies.

While at Ithaca, New York, my attention was frequently called to house flies that carried this gamasid mite. Upon an investigation I succeeded in finding mites that had their chelicerae inserted into the ventral body wall of the fly, and in one case the mite remained so attached after being killed, along with its host.

When these mites feed upon the house fly they attach themselves always at a definite place. This is at the base of the

abdomen on its ventral surface, the anterior end of the mite being directed toward the head of the fly. The reason for the mite always taking this position is not quite clear at present. I can see two advantages in it, however; first, the mite is in a place protected from the attacks of its host; second, this position does not throw the fly out of balance when flying. In all cases thus far only the females of this parasitic mite have been found. The description of the species follows.

#### DESCRIPTION OF SPECIES.

##### *Macrocheles muscae* n. sp.

General appearance stout, robust; integument well chitinized, hence color a dark yellowish brown. Body clothed very sparsely with small, simple, curved bristles.

Mouth-parts well developed. Palpi about one-half as long as first pair of legs; first segment longest, concave on its inner margin, and about four-fifths as long as femur of leg I; second segment slightly shorter than the first; third subequal to the second; fourth slightly over one-half as long as the third, bearing many setae or hairs and a long prominent bristle slightly longer than the segment itself on its outer margin; distal segment very short, about one-third as long as segment four, and immovably joined to this segment; it has many bristles, a prominent spine at its base on the inside, and a long, slightly curved, tactile spine at its apex. Chelicerae retractile, when extended slightly surpassing the palpi; geniculate at about their middle, and strongly chelate at the apex; chelae stout, well chitinized, each with a prominent tooth on its inner margin; fixed chela with a small spine on its upper margin about one-third the distance from its base to apex; at the base of the fixed chela on its lower side is situated a long pectinate seta, about equal to the chelae themselves in length and with barbs on one side only. Hypostome prominent; about two and one-half times as long as broad, with three prominent bristles, and ending in two large cusps, between which is the tongue or lingula; lingula as long as the cusps of the hypostome, with some hairs along its sides, divided at its median line into halves each of which ends in a curved setaceous tip.

Cephalothorax not demarcated from abdomen; bearing a pair of small anteriorly directed setae on its anterior margin near the median line. Shoulder bristles but little larger than the other bristles of the body. Sternum extending to between the third pair of coxae; posterior margin concave. The sternum bears three pairs of subequal, backwardly directed, simple, almost straight setae.

Abdomen broad, evenly rounded behind. Peritreme extending from

the anterior margin of the cephalothorax to the level of the third coxae; it is bent upon itself just before the stigma is reached. Stigmal plate extending but little beyond the stigma, truncate at this end and of about equal width throughout its length, and bearing two obscure hairs, one on each side of the stigma. Metasternalia present, small, triangular; each bearing a simple, curved seta. Genital plate semidisc-shaped, with a single pair of bristles. This plate is situated directly between the fourth pair of coxae, and joins the anal plate along a straight, transverse suture. Anal plate large, somewhat shield-shaped; with four pairs of bristles. Anus circular, situated near the posterior margin of anal plate, surrounded with a thickened border of chitin in the form of a collar; at the outside margin of the collar is situated one of the four pairs of setae found on the anal plate.

Legs stout; anterior pair as long as the body; second pair about three-fourths as long, but much thickened; third pair subequal in length to second; last pair equal to the first in length, and extending beyond the posterior margin of the abdomen by the full length of its last two segments. Tarsus of leg I slightly longer than tibia, and ending in several tactile hairs; tibia considerably longer than patella; patella subequal to femur. The tarsi of the last three pairs of legs each bear a stout pair of claws, between which is situated an expanded, hyaline pulvillus. The spines toward the end of tarsus of leg II are suddenly narrowed near their tips, and end in strongly chitinized, thorn-like processes. Length of body, 0.97 mm.; width, 0.62 mm.

From Ithaca, New York, on *Musca domestica*, by Dr. J. F. Illingworth and by the writer. From Corvallis, Oregon, on *Musca domestica*, by the writer.

Description made from five female specimens, one of which was dissected. This species is quite distinct from any of our known American forms. I find that according to natural arrangement it comes next to *Macrocheles muscorum* Ewing, in my collection. It differs from this species in being about twice as large, in having triangular metasternalia instead of circular, in having the anal plate subshield-shaped instead of being oblong oval, as well as in many other particulars.

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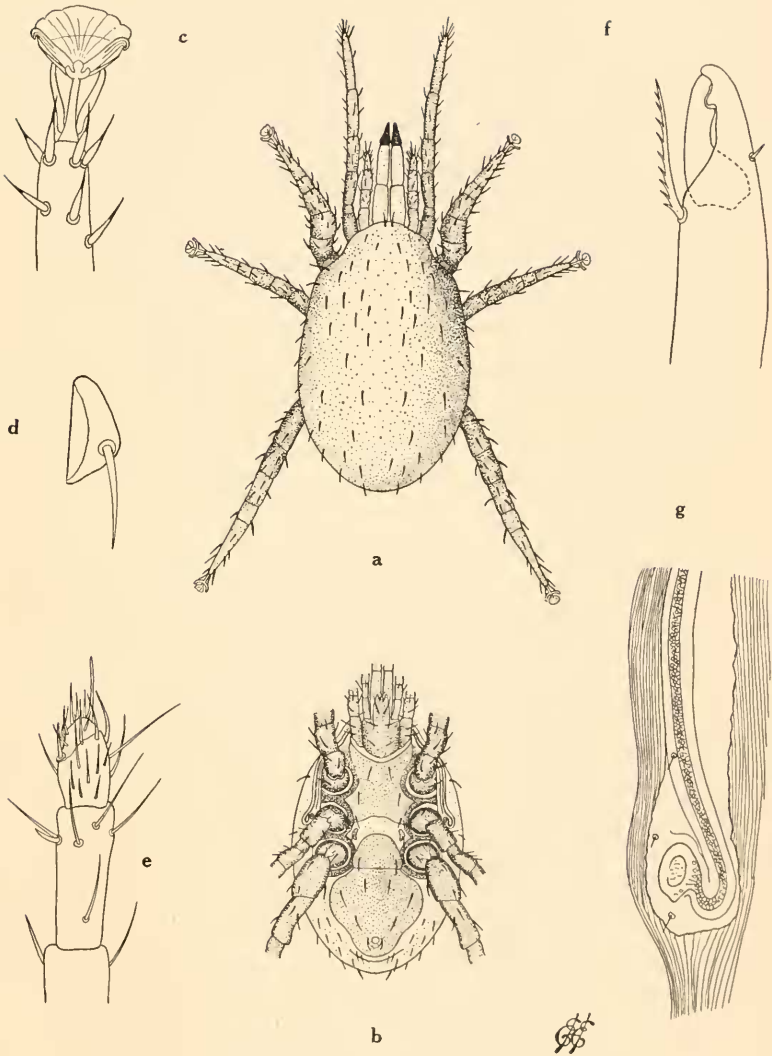
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#### EXPLANATION OF PLATE XVII.

*Macrocheles muscae* n. sp. *a*, Adult female, dorsal view; *b*, ventral view of body of female; *c*, ventral view of distal end of tarsus of leg II; *d*, left metasternalium; *e*, tip of right palpus as seen from above; *f*, outside view of chela of left chelicera; *g*, posterior part of peritreme and stigmal plate showing the tracheal trunk filled with air vacuoles.

#### Crane-flies and Sweets (Diptera).

Mr. Claude Morley, in *The Entomologist*, for July, 1913, mentions observing *Tipula* sucking sweets. He says: "On May 23rd I was much struck by the unwonted attitude of a female *Tipula peliostigma*, which was sitting on a dogwood leaf with her body closely appressed. This appeared so unusual in the insects of this genus, which seem to invariably stand high upon the tips of their elongate legs, that I looked more closely, and found that she was greedily sucking the honey dew which had fallen from a batch of aphids. \* \* \* I have never met with *Tipulae* on honey dew before, and consider the incident remarkable; but that the genus is fond of sweets is, I believe, a well known fact." He further mentions observing species of this genus "distinctly sucking the sweets from the stylopods of *Angelica sylvestris* \* \* \*," and of taking them on overnight "sugar."



MACROCHELES MUSCAE—EWING.